

IN THE CLAIMS:

Please CANCEL claims 1-20 without prejudice to or disclaimer of the recited subject matter.

Please ADD new claims 21-45, as follows. Please note that all claims currently pending in this application are reproduced below, for the Examiner's convenience.

1-20. (Canceled)

21. (New) An optical apparatus comprising:

an optical device arranged on an optical path extending from a light source to a predetermined position;

an optical sensor; and

a measuring device which measures an optical characteristic or a change in an optical characteristic of said optical device on the basis of an output from said optical sensor,

wherein said optical sensor is arranged outside the optical path and senses light which is emitted from a second light source arranged outside the optical path and is reflected by said optical device.

22. (New) The apparatus according to claim 21, wherein said apparatus further comprises a second light sensor arranged outside the optical path to sense light,

the second optical sensor senses light which is emitted from the second light source and is scattered by said optical device, and

said measuring device measures the optical characteristic or the change in the optical characteristic of said optical device on the basis of an output from the second optical sensor in addition to the output from said optical sensor.

23. (New) The apparatus according to claim 21, wherein said apparatus further comprises a memory which stores information indicating a correlation between the optical characteristic or the change in optical characteristic of said optical device and a detection or measurement result of light which is emitted from the second light source and is reflected by said optical device, and

said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of the output from said optical sensor and the correlation.

24. (New) The apparatus according to claim 22, wherein said apparatus further comprises a memory which stores information indicating a correlation between the optical characteristic or the change in optical characteristic of said optical device and a detection or measurement result of light which is emitted from the second light source and is scattered by said optical device, and

said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of the output from the second optical sensor and the correlation.

25. (New) The apparatus according to claim 21, wherein the light source comprises an EUV light source.

26. (New) The apparatus according to claim 21, wherein the optical characteristic is reflectance.

27. (New) The apparatus according to claim 21, wherein said apparatus further comprises a projection optical system for projecting a pattern onto a substrate and is configured as an exposure apparatus.

28. (New) A semiconductor device manufacturing method comprising steps of:  
coating a substrate with a photosensitive agent;  
transferring a pattern onto the substrate coated with the photosensitive agent in said coating step using the apparatus as defined in claim 27; and  
developing the photosensitive agent on the substrate bearing the pattern transferred in the exposure step.

29. (New) An optical apparatus comprising:  
an optical device arranged on an optical path extending from a light source to a predetermined position;  
an optical sensor; and

a measuring device which measures an optical characteristic or a change in an optical characteristic of said optical device on the basis of an output from said optical sensor,

wherein said optical sensor is arranged outside the optical path and senses light which is emitted from a second light source arranged outside the optical path and is scattered by said optical device.

30. (New) The apparatus according to claim 29, wherein said apparatus further comprises a second light sensor arranged outside the optical path to sense light,

the second optical sensor senses light which is emitted from the second light source and passes through said optical device, and

said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of an output from the second optical sensor in addition to the output from said optical sensor.

31. (New) The apparatus according to claim 29, wherein the light source comprises an EUV light source.

32. (New) The apparatus according to claim 29, wherein the optical characteristic is reflectance.

33. (New) The apparatus according to claim 29, wherein said apparatus further comprises a projection optical system for projecting a pattern onto a substrate and is configured as an exposure apparatus.

34. (New) A semiconductor device manufacturing method comprising steps of:

- coating a substrate with a photosensitive agent;
- transferring a pattern onto the substrate coated with the photosensitive agent in said coating step using an optical apparatus as defined in claim 33; and
- developing the photosensitive agent on the substrate bearing the pattern transferred in the exposure step.

35. (New) An optical apparatus comprising:

- an optical device arranged on an optical path extending from a light source to a predetermined position;
- an optical sensor; and
- a measuring device which measures an optical characteristic or a change in an optical characteristic of said optical device on the basis of an output from said optical sensor,

wherein said optical sensor is arranged outside the optical path and senses light which is emitted from a second light source arranged outside said optical path and is scattered by a substance generated from the light source and deposited on said optical device.

36. (New) The apparatus according to claim 35, wherein the light source comprises an EUV light source.

37. (New) The apparatus according to claim 35, wherein the optical characteristic is reflectance.

38. (New) The apparatus according to claim 35, wherein said apparatus further comprises a projection optical system for projecting a pattern onto a substrate and is configured as an exposure apparatus.

39. (New) A semiconductor device manufacturing method comprising steps of:  
coating a substrate with a photosensitive agent;  
transferring a pattern onto the substrate coated with the photosensitive agent in said coating step using an optical apparatus as defined in claim 38; and  
developing the photosensitive agent on the substrate bearing the pattern transferred in the exposure step.

40. (New) An optical apparatus comprising:  
an optical device arranged on an optical path extending from a light source to a predetermined position;  
a deposition amount sensor; and

a measuring device which measures a deposition amount of a substance generated from the light source and deposited on the optical device on the basis of an output from the deposition amount sensor,

wherein the deposition amount sensor is arranged outside the optical path.

41. (New) The apparatus according to claim 40, wherein said apparatus further comprises:

a memory which stores information indicating a correlation between the optical characteristic or the change in optical characteristic of said optical device and the deposition amount of the substance deposited on said optical device, and

said measuring device derives the optical characteristic or the change in optical characteristic of said optical device on the basis of an output from the deposition amount sensor and the correlation.

42. (New) The apparatus according to claim 40, wherein said apparatus further comprises a projection optical system for projecting a pattern onto a substrate and is configured as an exposure apparatus.

43. (New) A semiconductor device manufacturing method comprising steps of:

coating a substrate with a photosensitive agent;

transferring a pattern onto the substrate coated with the photosensitive agent in said coating step using an optical apparatus as defined in claim 42; and  
developing the photosensitive agent on the substrate bearing the pattern transferred in the exposure step.

44. (New) An optical apparatus comprising:  
an optical device arranged on an optical path extending from a light source to a predetermined position;  
an optical sensor; and  
a measuring device which measures an optical characteristic or a change in an optical characteristic of said optical device on the basis of an output from said optical sensor,  
wherein said optical sensor is arranged outside the optical path and senses light which is emitted from a second light source arranged outside said optical path and passes through said optical device.

45. (New) The apparatus according to claim 44, wherein said apparatus further comprises a projection optical system for projecting a pattern onto a substrate and is configured as an exposure apparatus.